

X_2 is a hydrophobic residue;
 X_3 is an acidic or an aliphatic residue;
 X_4 is a basic residue;
 X_5 is an apolar residue;
 X_6 is an aromatic residue;
 X_7 is a polar residue;
 X_8 is an aliphatic residue;
 X_9 is an acidic or an aliphatic residue;
 X_{10} is an aromatic residue;
 X_{11} is an aromatic residue;
 X_{12} is a polar residue;
 X_{13} is Ile;
 X_{14} is an apolar residue;
 X_{15} is an acidic residue;
 X_{16} is a polar residue;
 X_{17} is a basic or an aliphatic residue;

Z_1 is H_2N- , $RHN-$ or, $RRN-$;

Z_2 is $-C(O)R$, $-C(O)OR$, $-C(O)NHR$, $-C(O)NRR$;

each R is independently (C_1-C_6) alkyl, (C_1-C_6) alkenyl, (C_1-C_6) alkynyl, substituted (C_1-C_6) alkyl, substituted (C_1-C_6) alkenyl or substituted (C_1-C_6) alkynyl;

each "—" between residues Z_1 and X_1 and residues Z_2 and X_{17} represents a covalent linkage; and

each "—" between residues X_1 through X_{17} represents a covalent linkage,

wherein the compound reduces cell-associated binding of transferrin as measured in an *in vitro* cellular binding assay and produces at least an additive effect with soluble HFE- β_2m heterodimers in reducing cell-associated binding of transferrin as measured in the assay.

15. (New) The method of Claim 14. wherein:

X_1 is an apolar amino acid;
 X_2 is an aromatic amino acid;

X₃ is an acidic amino acid;
X₄ is a basic amino acid;
X₅ is an apolar amino acid;
X₆ is an aromatic amino acid;
X₇ is a polar amino acid;
X₈ is a aliphatic amino acid;
X₉ is a an acidic amino acid;
X₁₀ is an aromatic amino acid;
X₁₁ is an aromatic amino acid;
X₁₂ is a polar amino acid;
X₁₃ is Ile;
X₁₄ is an apolar amino acid;
X₁₅ is an acidic amino acid;
X₁₆ is a polar amino acid;
X₁₇ is a basic amino acid; and

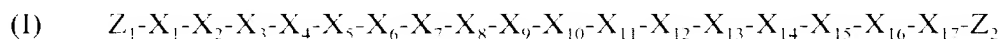
each " " between residues X_i through X_{i-} is independently an amide, a substituted amide or an isostere of amide.

16. (New) The method of Claim 14, wherein:

X₁ is Gly;
X₂ is Trp or Ala;
X₃ is Asp or Ala;
X₄ is His;
X₅ is Met;
X₆ is Phe;
X₇ is Thr;
X₈ is Val,
X₉ is Asp or Ala;
X₁₀ is Phe,
X₁₁ is Trp;
X₁₂ is Thr;

X₁₃ is Ile;
X₁₄ is Met;
X₁₅ is Glu;
X₁₆ is Asn;
X₁₇ is His or Ala;
Z₁ is H₂N-;
Z₂ is -C(O)OH; and
each "—" between residues X₁ through X₁₇ is an amide linkage.

17. (New) A method of treating an iron overload disease, comprising administering to a subject a therapeutically effective amount of a compound comprising the formula:



wherein:

X₁ is an apolar residue;
X₂ is a hydrophobic residue;
X₃ is an acidic or an aliphatic residue;
X₄ is a basic residue;
X₅ is an apolar residue;
X₆ is an aromatic residue;
X₇ is a polar residue;
X₈ is an aliphatic residue;
X₉ is an acidic or an aliphatic residue;
X₁₀ is an aromatic residue;
X₁₁ is an aromatic residue;

X₁₂ is a polar residue;

X₁₃ is Ile;

X₁₄ is an apolar residue;

X₁₅ is an acidic residue;

X₁₆ is a polar residue;

X₁₇ is a basic or an aliphatic residue;

Z₁ is H₂N-, RHN- or, RRN-;

Z₂ is -C(O)R, -C(O)OR, -C(O)NHR, -C(O)NRR;

each R is independently (C₁-C₆) alkyl, (C₁-C₆) alkenyl, (C₁-C₆) alkynyl, substituted (C₁-C₆) alkyl, substituted (C₁-C₆) alkenyl or substituted (C₁-C₆) alkynyl;

each "—" between residues Z₁ and X₁ and residues Z₂ and X₁₇ represents a covalent linkage; and

each "—" between residues X₁ through X₁₇ represents a covalent linkage,

wherein the compound reduces cell-associated binding of transferrin as measured in an *in vitro* cellular binding assay and produces at least an additive effect with soluble HFE/ β_2 m heterodimers in reducing cell-associated binding of transferrin as measured in the assay.

18. (New) The method of Claim 17, wherein:

X₁ is an apolar amino acid;

X₂ is an aromatic amino acid;

X₃ is an acidic amino acid;

X₄ is a basic amino acid;

X₅ is an apolar amino acid;

X₆ is an aromatic amino acid;

X₇ is a polar amino acid;

X₈ is a aliphatic amino acid;

X₉ is a an acidic amino acid;

X₁₀ is an aromatic amino acid;

X₁₁ is an aromatic amino acid;

X₁₂ is a polar amino acid;

X₁₃ is Ile;

X₁₄ is an apolar amino acid;

X₁₅ is an acidic amino acid;

X₁₆ is a polar amino acid;

X₁₇ is a basic amino acid; and

each “—” between residues X₁ through X₁₇ is independently an amide, a substituted amide or an isostere of amide.

19. (New) The method of Claim 17, wherein:

X₁ is Gly;

X₂ is Trp or Ala;

X₃ is Asp or Ala;

X₄ is His;

X₅ is Met;

X₆ is Phe;

X₇ is Thr;

X₈ is Val;